

Robust Research and Rapid Response: The Plum Pox Virus Story

**Theodore R. Alter
Jeffrey C. Bridger
James W. Travis**

Abstract

Universities are frequently criticized for being unresponsive to the needs of their stakeholders. In response to this perception, many institutions of higher learning have taken steps to become more productively engaged with the people, organizations, and communities they serve. In this article, we analyze the process of engagement by focusing on a coordinated university/government response to plum pox—a disease that can destroy entire orchards of stone fruit trees and, potentially, a large portion of the North American Stone Fruit industry. Working in partnership with growers enabled university researchers, extension agents, and government representatives to respond rapidly and thus to quickly and effectively contain the disease. We suggest that four engagement factors shaped university involvement and are largely responsible for the success of this initiative. These include a mission mentality, the existence of partnerships, organizational flexibility and agility, and accessibility.

Introduction

America's universities are facing unprecedented scrutiny and criticism. Faculty are faulted for pursuing research at the expense of teaching, for conducting research that is disconnected from real-world problems, and for worrying more about career advancement than service to the community. Administrators are also under fire as legislators, students, and parents complain about rising costs, large class sizes, and lack of accountability. Other critics complain that institutions of higher learning are losing their sense of civic purpose and becoming commercial enterprises that differ only in name from their counterparts in the business world.

In its report titled *Returning to Our Roots: The Engaged Institution*, the Kellogg Commission on the Future of State and Land-Grant Universities (1999) argues that these and other criticisms are rooted in the perception that universities are out of touch and out of date.

Whether fair or not, there is a widespread perception that our universities are not meeting important societal needs. As the Kellogg Commission (1999, 9) put it, "In the end, what these complaints add up to is a perception that, despite the resources and expertise available on our campuses, our institutions are not well organized to bring them to bear on local problems in a coherent way."

These criticisms have generated a flurry of activity on campuses across the nation. Efforts are under way to help students develop the civic skills necessary to maintain a democratic society (Boyte and Kari 1996), universities are reevaluating faculty roles and rewards to encourage scholarship that meets both professional and public needs (Hyman *et al.* 2000), and there is growing interest in creating research agendas and models that address critical social, economic, political, and environmental issues (Ansley and Gaventa 1997).

Each of these activities is part of a broader movement to develop new and productive connections between the university and its publics. In place of traditional forms of extension and outreach, this new approach is characterized by what the Kellogg Commission calls engagement, which it defines as a reconfiguration of teaching, research, extension, and service activities in ways that enable universities to become "more sympathetically and productively involved with their communities, however community may be defined" (*Kellogg Commission on the Future of State and Land-Grant Universities* 1999, 9).

The engagement ideal is profoundly different from the one-way transfer of knowledge and technology that has traditionally characterized university-based outreach and extension. Engagement is based on the explicit recognition that the problems and issues confronting society are so complex and involve so many different groups that we must go beyond inherited practices to create more interactive relationships with our stakeholders.

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To date, the concept of engagement has been more clearly articulated in theory than in practice. In this article, we hope to take a step toward bridging this gap. To do so, we begin by telling a story that at first glance seems unremarkable, but which has

important lessons to teach about how universities can become more productively engaged with the people and communities they serve.

The Plum Pox Story

The story we tell centers on plum pox, a devastating disease of such stone fruits as peaches, plums, nectarines, and almonds. The plum pox virus was first discovered in Bulgarian plums in 1915. At first, the disease spread slowly, making its way northward through eastern Europe. Plum pox began to spread more quickly after 1950, reaching Germany in 1956, Poland and Russia in 1961, France in 1970, and Spain in 1984. By 1992, the virus had gained a foothold in the Western Hemisphere, where it was detected in an orchard in Chile.

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Until the late 1990s, plum pox was confined to South America. In October 1999, however, a farmer in Adams County, Pennsylvania, noticed some unusual symptoms on an Encore peach. Almost immediately, a team of scientists and extension educators from Penn State University (PSU), the Pennsylvania Department of Agriculture (PDA), and the United States Department of Agriculture (USDA) began developing a strategy for identifying the virus in orchards, educating fruit growers and homeowners, and eradicating the disease.

Because testing for the plum pox virus requires fresh leaves, the time available to examine potentially infected orchards in the fall of 1999 was very limited. Nonetheless, the research team was able to collect samples from 218 orchards. Of these, 18 were found to be positive for the virus. Over the next three years, survey teams from the PDA and the USDA sampled 4,820 fruit orchards throughout Pennsylvania and found that over 1,000 acres were infected with plum pox virus. Unfortunately, the only way to control the virus is by burning and removing the infected trees. Thus far, over 1,300 acres have been destroyed, and by 2003 only two orchards tested positive for plum pox, and the number of infected trees dropped to a low of just 0.2 percent.

While the research teams were searching for infected trees, scientists and extension educators from Penn State focused their efforts on educating fruit growers, homeowners, and related industries about best practices for managing the virus. Early in the crisis, there were widespread rumors that the entire Pennsylvania peach industry was going to be destroyed with no compensation for lost crop value. To allay these concerns and facilitate grower cooperation with research and analysis, Penn State implemented a plan to communicate with growers about their fears and provide them with continually updated information about detection and eradication efforts. The College of Agricultural Sciences launched a comprehensive plum pox virus Web site that provided constant updates about the plum pox survey progress and the number of infected acres. Penn State and PDA invited European specialists to participate in a symposium on plum pox and recommend control strategies. The resulting fact sheet described the history of the plum pox virus worldwide, and discussed the current status of the problem in Pennsylvania. All of this information was supplemented at public meetings conducted by extension educators throughout the state during the winter of 1999–2000. These sessions provided additional opportunities for growers to talk with extension specialists about the virus, learn about the fact sheets and the Web site, and gain information about the latest developments in the fight against plum pox.

Local extension agents also facilitated on-site cooperation with detection and eradication efforts. This was key since growers were naturally reluctant to destroy their livelihood. Extension agents helped PDA survey workers locate orchards, and introduced them to individual growers. This personal touch alleviated much of the resistance the PDA survey workers might otherwise have encountered. In fact, only one grower refused to allow a PDA survey worker onto his property. And even in this instance, the local extension agent was permitted to collect leaf samples.

To help educate policymakers and the public about the plum pox virus, Penn State faculty, extension agents, and communication specialists cooperated to produce a video that described the plum pox virus eradication program. The video also illustrated the emotional and economic impacts of the disease through interviews with growers and nursery owners. The tape was shown to growers and representatives from the national stone fruit industry and government agencies.

As the plum pox crisis progressed, compensation became an important issue. If affected growers were not compensated, they risked immediate financial ruin. At first, the federal government was reluctant to consider any kind of compensation program. Working together, Penn State faculty, local extension agents, and growers developed an indemnification program and convinced the USDA to adopt it. This program, the first of its kind in the United States, was a notable departure from standard policy, which did not compensate growers for lost economic productivity. The U.S. Congress appropriated \$13.4 million for indemnification payments to growers. Under this program, the federal government pays for 85 percent of the value of removed trees. The remaining 15 percent is paid for by the state government.

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Lessons Learned

The coordinated effort to eradicate the plum pox virus shows that universities can address the practical problems facing our stakeholders in a “rapid response mode.” They can do so, however, only if there is an organizational structure and culture that facilitates engagement. On the basis of our experience with the plum pox virus, we have identified four factors that are essential to effective engagement. These include: (1) a mission mentality; (2) the existence of partnerships; (3) organizational flexibility and agility; and (4) accessibility.

Mission mentality: When Justin Morrill and Abraham Lincoln created the land-grant university system, they envisioned a system of institutions that would be more than centers of higher learning. These institutions would also embrace a commitment to serving the public and working to address important societal issues. At both organizational and individual levels, all of those involved in the plum pox eradication effort were driven by the land-grant mission of public service and were using the best available science to address critical societal issues. Penn State faculty and extension agents were committed to using science-based knowledge to serve the stone fruit industry and solve the plum pox crisis. For their

part, the PDA and USDA were committed to working closely with Penn State faculty and cooperative extension agents to gain the trust and cooperation of growers. Perhaps the most important indicator of this mission mentality was willingness, on the part of all organizations, to share credit for the effort's success. Given the economic stakes involved, it would have been tempting for any one of the partners to claim that their efforts were most responsible for eradicating the virus. That this did not happen shows that a genuine commitment to the land-grant mission can be cultivated, both within and beyond the university.

Partnerships: A mission mentality was also facilitated by partnerships that had been nurtured over a long period of time at several different levels. At the local and personal levels, extension agents had developed close working relationships with growers. This created an atmosphere of trust and respect. The growers believed that the agents would protect their economic interests—especially when it came to dealing with more distant government agencies such as the PDA and the USDA. Without the buffer created by the partnership between local agents and growers, the detection efforts would likely have been hampered. In fact, without the assurance provided by extension agents, many growers would have seriously questioned the motives of agencies that could order their orchards destroyed.

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and effort would have been spent creating lines of communication, forming a division of labor, and making decisions about how organizational resources would be allocated. The resulting effort to address the plum pox virus would have been less well organized,

A similar process occurred at the organizational level. Over the course of working with one another for many years, PDA, USDA, Penn State Cooperative Extension, and university faculty developed close interorganizational linkages and working relationships. These connections provided the infrastructure necessary to provide a rapid, unified response to the plum pox virus. Had these linkages and relationships not been in place, much time

slower, and much more conflictual. Because key organizational relationships were already in place, many of the start-up tasks that normally accompany crisis management were avoided.

Organizational flexibility and agility: Partnerships, while important, are best thought of as a necessary but not sufficient condition for effective engagement. Universities must also have the institutional capacity to respond to issues in a flexible and agile manner. Almost immediately after the first positive results for plum pox were announced, the director of Penn State Cooperative Extension and the Director of the Pennsylvania Agricultural Experiment Station met with the department heads,

faculty, and extension agents from the College of Agricultural Sciences and made an “on the spot” decision to make plum pox a critical priority of the highest order. And, more important, they decided to make an immediate and substantial reallocation of resources to combat the virus and develop educational strategies for growers, policymakers, and the public. These decisions reallocated faculty and staff time to the plum pox effort, and committed funds to support plum pox research and extension programming and purchase sophisticated scientific testing equipment. By definition, engaged universities are responsive to changing societal needs. This in turn requires the organizational capacity to quickly redefine priorities and shift resources accordingly.

“Creating an engaged institution requires change at virtually every level of the organization.”

Accessibility: Universities, especially large research universities, are confusing places. Despite the vast amount of information and expertise we possess, much of it remains inaccessible to our stakeholders. The informational and educational campaign mounted to combat the plum pox virus demonstrates that universities can create mechanisms and processes to make our resources more readily available to the public. The key to increasing accessibility lies in developing multiple points of entry that can be easily negotiated by stakeholders with different levels of education and resources. In the plum pox outreach effort, for instance, stakeholders were offered four distinct, yet

complementary, ways to access information about plum pox and the status of testing and eradication efforts. First, extension agents made direct contact with growers through individual and group meetings. Second, the plum pox Web site provided growers with constantly updated information about the status of the disease. Third, Penn State faculty and extension agents developed easily readable fact sheets and other publications to educate the public about the plum pox virus and explain the testing and eradication program. Finally, a video was produced that summarized much of the information available through other media.

Conclusion

Despite the charge that our higher education institutions are out of touch with the public and its problems, the plum pox story demonstrates that universities can move quickly and effectively to address emerging issues. The coordinated, multifaceted plum pox initiative saved Pennsylvania's stone fruit industry and halted the spread of the virus to other states. The success of this project was due, in large part, to a fundamental, long-practiced commitment to engagement and service, renewed in 1996 when Penn State University launched a comprehensive effort to strengthen outreach and cooperative extension. This initiative raised outreach from just one of many university functions to a central, vital component of the university's mission. Outreach is now just as important as teaching, research, or service. The plan that was eventually adopted maximizes all available resources within and across outreach units and academic colleges, and it does so in a way that enables the university to address important issues and to engage the public in a more coherent way than was previously possible. In the case of the plum pox crisis, this capability manifested in the mission mentality of faculty and extension agents; the existence of long-term, effective partnerships; organizational flexibility and agility in decision making and resource allocation; and the unlimited accessibility to expertise and information available from the university.

What is important in strengthening university engagement is commitment to change, to consciously building and strengthening university platforms and supports for engagement. Creating an engaged institution requires change at virtually every level of the organization. Most important, change must be grounded in the understanding and behavior of individuals (Alter 1999; 2003).

Without behavioral change on the part of many individuals, it is impossible to fully embrace engagement. The importance of individual learning in this process cannot be overemphasized. As individual learning becomes cumulative, organizational learning begins to occur. When this happens, people develop new ways of relating to each other and to organizations in the larger society. Organizational learning leads to shifts in the way our business is structured and conducted. It also leads to changes in cultural and behavioral norms and the values of the organization. Ultimately, it is this cultural transformation that will sustain a long-term commitment to engagement in our universities.

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About the Authors

- Theodore R. Alter is the associate vice president for outreach, director of Cooperative Extension, and associate dean, College of Agricultural Sciences, at Penn State University. His research and extension programs have focused on rural and community economic development, public sector economics, and comparative rural development policy.
- Jeffrey C. Bridger is senior research associate in Cooperative Extension at Penn State University. His research and outreach focuses on land use, sustainable community development, public scholarship, and university engagement.

- James W. Travis is professor of plant pathology in the Department of Plant Pathology at Penn State University. His research and extension programs have focused on applied plant pathology, diseases of tree fruits and grapes, disease control, integrated pest management, and expert systems.